General index to volume 140

ABDEL-MEGUID, A. A., *see* BONATTI, E.

ABERG, G., AGUIRRE, L., LEVI, B., NYSTROM, J. & SAFSTROM, A., geotectonic, geochemical and geochronological features of spreading-subsidence and ensialic marginal basin generation in Central Chile during the Cretaceous [*abs*], 966–7

Abt Schist zone, *see* Arabian shield

ACKERMAND, D., *see* WINDLEY, B. F.

Ad Dawadimi granitoid province, *see* Arabian shield

ADAMS, B., IGS Hydrogeological Unit experience with portable calculators and microcomputers [*abs*], 973

AGUIRRE, L., *see* ABERG, G.

AHNERT, F., analytic geometry of relief as a function of area: a spatial application of the Hurst rule? [*abs*], 970

AKTAS, G. & ROBERTSON, A. H. F. Maden Complex: an Eocene marginal basin in the Tethys suture zone, SE Turkey [*abs*], 966

Al_2SiO_5 pegmatites, origin, 960

albite porphyroblast schists, of Dalradian, 601, maps 602–3, 604

ALDERTON, D. H. M. & RANKIN, A. H., the character and evolution of hydrothermal fluids associated with the kaolinized St Austell granite, SW England, 297–300 figs

ALEXANDER, L. S., structural influences on ground water flow in the Chalk of S Dorset [*abs*], 334

ALLEN, P. A., CABRERA, L., COLOMBO, F. & MATTER, A., variations in fluvial style on the Eocene–Oligocene alluvial fan of the Scala Dei Group, SE Ebro Basin, Spain, 133–46 figs

ALLEN, J. M., CHO, M. & FAWCETT, J. J., application of SEM in hydrothermal experimental studies related to metamorphism [*abs*], 975

ALLEN, J. R. L., *see* PARKER, A.

alluvial fan, variations of fluvial style in, 133–40

ALMOND, D. C., *see* HARRIS, N. B. W.

AL-SHANTI, A. M. & GASS, I. G., the Upper Proterozoic ophiolite mélange zones of the easternmost Arabian shield, 867–76, figs

anaerobic metabolism, pathways and function, 27–31

——, phylogenetic distribution of pathways, 31–2

anatectic rocks, and fluid distribution in the continental lithosphere, 635–7

Andes, Central, timing of tectonic and magmatic events, 281–3

Andes, sedimentary unroofing studies of, 978

ANDREWS, M. J., FUGE, R. & JOHNSTON, C., use of iodine in geochemical prospecting [*abs*], 979

Antarctic Peninsula, Cretaceous arc, back-arc system, 967

—— palaeomagnetic study of Jurassic rocks from, 145–54, and Jurassic position of, 949–53

aquifer(s), alluvial, Malaysia and Indonesia, 325

——, gravel, Dungeness, 334

——, Lower Greensand, 333

Ar Rayn granitoid province, *see* Arabian Shield

Arabia, Central, Proterozoic lavas, 185, 186, map 187, 188 *et sqq*

——, Proterozoic volcano-sedimentary belts, Rb-Sr study of, 206–12

Arabian Shield, easternmost part, geology of, map 868, 869, 870

——, S, mineralization and structure, 981

Arabian–Nubian Shield, 867

Archaean Gneiss Complex, NW India, mineral paragenesis and metamorphic conditions, 957

Ardnish pegmatite, NW Scotland, 815–6

Arfan suite, Rb-Sr data, 209

Arran, Highland Border Suite of, map 268

ASHBY, M. F., *see* COOKSLEY, S. D.

ASHWORTH, J. R. & TYLER, I. M., the metamorphic environment of the Strontian Granodiorite [*abs*], 162

ASPEN, P., *see* UPTON, B. J. G.

ASSAF, H. S., *see* BONATTI, E.

ASTIN, T. R., on implications for Caledonian plate tectonic models of chemical data from volcanic rocks of the British Old Red Sandstone [discussion of: Thirlwall], 315–8

ATKINSON, P., fluorite mineralization in the Southern Pennine Orefield [*abs*], 980

ATKINSON, T. C., cave development and the age of the Cheddar Gorge [*abs*], 322

AUDLEY-CHARLES, M. G., discussion [TURCOTTE], 722–3 fig

back-arc basins, basalt volcanism within, 969

——, of northwestern Pacific, heat flow and magmatism in, 969

BAIRD, A. W., *see* POWELL, D.

BAKER, A. J. & DROOP, G. T. R., Grampian metamorphic conditions deduced from mafic granulites and sillimanite–K-feldspar gneisses in the Dalradian of Glen Muick, Scotland, 489–97 figs

—— & ——, mafic granulites and migmatitic gneisses from the Dalradian sillimanite zone [*abs*], 958

BAKIEWICZ, W., *see* MILNE, D. M.

Balquhidder-Crianlarich, albite porphyroblast schists of, map 603, 604

BALSON, P. S., temperate, meteoric diagenesis of Pliocene skeletal carbonates from eastern England, 377–85 figs

Baltic Basin, 42–3
Bangladesh, NW, hydrogeology, 325
BARBER, J., high grade metamorphism of Dalradian pelites in eastern Connemara, Eire [*abs*], 957–8
BARNICOAT, A. C., metamorphism of the Scourie Complex, NW Scotland [*abs*], 958
——, CRAWFORD, E. S., WILLIAMS, J. O. & O'HARA, M. J., electron microscope study of exsolution in a clinopyroxene from Scourie, Sutherland, NW Scotland [*abs*], 162
BARTHOLOMEW, D. S. & TARNEY, J., an ensialic marginal basin in the Southern Andes [*abs*], 967
basalt, Piton des Neiges, 326
——, Saefell, 326
——, Surtla, 326
basement, age and nature of, in southern Britain, 499–509
basin dewatering pathways, 980
basin modelling, Southern Santos Basin, 426–30
basin studies, applications of pyrolysis to, 434–43
——, correlation by biological markers in, 413–4
——, petroleum geochemistry applied to, 413
BATHURST, R. G. C., neomorphic spar versus cement in some Jurassic grainstones: significance for evaluation of porosity evolution and compaction, 229–37 fig
BAUR, M. E., diversity in Precambrian microbial communities, 5–12 figs
Bay of Biscay, northern continental margin of, 913, 915, 916
BEECROFT, I. R., sediment transport during a glacial outburst from the Tsidjiore Nouve glacier, 15–18 June 1981 [*abs*], 321
BEESON, S., hydrochemical studies in East Sussex [*abs*], 333
BEHRMANN, J. H., a regional TEM study of quartzites deformed in low grade metamorphism [*abs*], 976
BENNETT, M. C. & GIBB, F. G. F., younging directions in the Dawros peridotite, Connemara, 63–73 figs
—— & ——, younging directions in the Dawros peridotite, Connemara [reply to discussion], 844
BEVINS, R. E., *see* KOKELAAR, B. P.
BEVINS, R. R., *see* SUTHREN, R. J.
biological action, on sediments, 328
bioturbation, and magnetic properties of sediment, 328
——, small-scale experiments on, 328
BISHOP, A. C. & KEY, C. H., nature and origin of layering in the diorites of SE Jersey, Channel Islands, 921–37 figs
Bjørnesund, *see* Greenland, West
Black Stockarton Moor subvolcanic complex, 665, maps 666 & 667, 668 *et sqq*
blueschists, Mona complex, 160
——, Oman, 98–100
——, Syros, Greece, 161
Bodinayakkanur crustal section, S India, 651–2
BOLAND, J. N., olivine to spinel transformation [*abs*], 975
BONATTI, E., CLOCCHIATTI, R., COLANTONI, P., GELMINI, R., MARINELLI, G., OTTONELLO, G., SANTACROCE, R., TAVIANI, M., ABDEL-MEGUID, A. A., ASSAF, H. S. & EL TAHIR, M. A., Zabargad (St John's) Island: an uplifted fragment of sub-Red Sea lithosphere, 677–90 figs
Borrowdale Volcanic Group, age of, 514
BOSENCE, D. W. J., coralline algal reef frameworks, 365–76 figs
boudinage and pinch-and-swell, Greenland, 840
BOULTER, C. A., compaction-sensitive accretionary lapilli: a means for recognizing soft-sedimentary deformation, 789–94 figs
BRAITHWAITE, C. J. R., calcrete and other soils in Quaternary limestones: structures, processes and applications, 351–63 figs
BRAZIER, S., SPARKS, S. & WILSON, L., the 1979 explosive eruption of the Soufriere Volcano, St Vincent [*abs*], 325–6
Brazil, see Southern Santos Basin
BREMER, H., relief generations in the Eifel mountains [*abs*], 970
British Isles, Eocene deformation on continental margin SW of, 913, map 914, 915–20
——, upper mantle and deep crust, map 106, 115–9
brittle and ductile processes, in granitoid mylonites, 841
——, in rocks [conference report], 839
——, in rocks, function of pressure, temperature and strain rate, 840
brittle–cataclastic flow transition, 840
brittle–ductile transition, development of shear bands in, 841
——, in sheared granodiorite, NE Spain, 841
——, in thrust sheets, 841
——, mathematical model, 840
BROMLEY, A., *see* CAMM, S.
BROOK, M., *see* POWELL, D.
BROOKS, J., applications of petroleum geochemistry to basin studies [introduction to report of meeting on: applications of petroleum geochemistry to basin studies], 413–14
BROWN, A. G., accelerated erosion and sedimentation in the lower Severn basin [*abs*], 321
BROWN, M., fluids in metamorphism [introduction to papers on: fluids in metamorphism], 529–32
—— [introduction to conference report on], metamorphic studies: research in progress, 3 March 1983, 159–60

BROWN, M., [introduction to conference report on] metamorphic studies: research in progress 16 March, 1983, 955–7
——, metamorphic evolution of garnet–cordierite gneisses from Timor, eastern Indonesia [*abs*], 957
——, summary of meeting, 'the role of phyllosilicates in metamorphism', 323
BRUNSDEN, D., *see* GOUDIE, A.
BUDEL, J., types of tropical landforms: new studies in southern India [*abs*], 970
BURT, T. P. & BUTCHER, D. P., patterns of soil moisture and throughflow in relation to defined topographic indices: some preliminary results [*abs*], 322
—— & DONOHUE, M. A., changes in the sediment yield of a small upland catchment following pre-afforestation ditching [*abs*], 971
—— & GARDINER, A. T., stream network form and runoff processes in two peat-covered catchments [*abs*], 321
BUSCHE, D., occurrences of silcrete in the central Sahara [*abs*], 970
BUSSELL, M. A., timing of tectonic and magmatic events in the Central Andes of Peru, 279–86 figs
BUTCHER, D. P., *see* BURT, T. P.
Bute, Highland Border Suite of, 269
BUTLER, R., *see* COWARD, M. P.

CABRERA, L., *see* ALLEN, P. A.
calcrete, and other soils, 351–63
calculators, field uses, 973
——, in hydrogeology, 973
Caledonian nappe tectonics, North Greenland, 125–9, map 124
Caledonian, orogeny, Scotland, 47, 57 *et sqq*
——, plate tectonic models based on ORS volcanic rocks, discussion, 315–8
——, tectonics NW Scotland, 799–802
——, volcanism, Bømlo, Norway 326
Caledonian plutonic and tectonic history, N of Great Glen Fault, 57–9
——, S of Great Glen Fault, 59–60
Caledonian trend, tectonic diachronism across, 57
Caledonides, central Norwegian, 966
——, NW Scottish, thrust and shear zones in Moine thrust zone, 795–811
Cameroon line volcanoes, 326
CAMM, S. & BROMLEY, A., the metatourmalinite–hydrothermal breccia Sn mineralization assemblage in SW England [*abs*], 980
Cape Foulwind, Waitakere Limestone of, map, 387
carbon dioxide, oxygen and plant growth, 16–9
carbonates, algal, New Zealand, 387–99
——, reefal, Zabargad (St John's) Island, 686–7, 689
——, SE Sicily, 335–46
Carboniferous, world biomass and productivity, 13–5
CAREY, S., *see* SIGURDSSON, H.
Carlentini Formation, 335–8
cave development, Cheddar Gorge, 322
——, Yorkshire Dales, 322
Central Arabian Shield, Proterozoic lavas, 185, 186, map 187, 188 *et sqq*
——, Proterozoic volcano-sedimentary belts, age of, 203–15
CHADWICK, R. A., KENOLTY, N. & WHITAKER, A., crustal structure beneath southern England from deep seismic reflection profiles, 893–911 figs
CHAMPNESS, P. E. & LORIMER, G. W., microanalysis of thin foils [*abs*], 975
CHANDLER, R. J., lessons from landslides [*abs*], 970
Channel Islands, 921
Cheddar Gorge, cave development, 322
Chile, Central, ensialic marginal basin generation, 966–7
China, S, early Palaeozoic marginal basin of, 966
CHO, M., *see* ALLEN, J. M.
CLARK, M. J., FRENCH, H. M. & HARRY, D. G., the genesis of linear ice-cored landforms in the western Canadian Arctic [*abs*], 322
clay mineral assemblages, Townsend Tuff Bed, 769–77
CLEMMEY, H., *see* OYARZUN, R.
——, TURNER, P. & FLINT, S., application of sedimentary unroofing studies to exploration—an example from the Andes [*abs*], 978
CLOCCHIATI, R., *see* BONATTI, E.
Coastal Batholith, of Peru, 279, map 280, 281
COLANTONI, P., *see* BONATTI, E.
COLE, J. W., Taupo volcanic zone—a marginal basin of the Taupo-Hikurangi arc system [*abs*], 968
COLLEY, H. & HINDLE, W. H., the influence of marginal basin development on the volcanic evolution of the Fiji Platform [*abs*], 968
COLLINS, D., *see* GOUDIE, A.
COLOMBO, F., *see* ALLEN, P. A.
compaction-sensitive accretionary lapilli, 789–94
conglomerate(s), shallow marine and continental, derived from coral-reefs, 401–11
Connemara, Dawros peridotite of, 63, map 65, 66 *et sqq*
——, vein fluids from Connemara Schists, 658, map 659, 660–1
continental collisions, 715–6
——, fault structures, 747–54
——, rifts, 706–11
COOKSLEY, S. D. & ASHBY, M. F., yield and fracture surfaces for solids under multiaxial loading [*abs*], 840
COOPER, C., *see* LEAKE, R. C.

coralline algae, as reef builders, 365–76
Coralline Crag, 377, map 378, 382 *et sqq*
correlation, biological markers applied to, 413–4
Cowal and Kintyre, albite porphyroblast schists of, map 602
COWARD, M. P., the thrust and shear zones of the Moine thrust zone and the NW Scottish Caledonides, 795–811 figs
—— & DALY, M., thrust tectonics in the Zambian Copperbelt [*abs*], 979
—— & MCCLAY, K. R., thrust tectonics of S Devon, 215–28 figs
——, KNIPE, R. J. & BUTLER, R., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 519
CRABTREE, R. W. & KIRKBY, M. J., ion exchange sampling techniques in hillslope solute studies [*abs*], 322
CRAWFORD, E. S., *see* BARNICOAT, A. C.
Cretaceous, high-pressure metamorphism, Oman, 97–104
Criffel–Dalbeattie pluton, discussion, 311–3
CRISTOFOLINA, R., *see* WELLS, M. K.
CROGHAN, P. C., osmotic regulation and the evolution of brackish- and fresh-water faunas, 39–46 figs
CRONAN, D. S., GLASBY, G. P., MOORBY, S. A., KNEDLER, K. E., THOMSON, J. & HODKINSON, R., recent sedimentation on the Tonga–Kermadec Ridge and in adjacent marginal basins [*abs*], 968
CROWTHER, J., hydrological observations in some Malaysian limestone aquifers and some implications for tropical karst landform development [*abs*], 321
——, *see* PITTY, A. F.
crustal deformation, mechanisms of, 701–24
crustal reworking, Loch Quoich line as limit of, 883–92
crustal structure, beneath southern England, 899–906
Currywongaun–Doughruagh intrusion, related to Dawros peridotite, 63, map 64

Dalradian, albite porphyroblast schists, petrogenesis, 601, maps 602–3, 604 *et sqq*
——, genesis and mobility of H_2O–CO_2 fluid phase during regional metamorphism, 577–99
——, Grampian metamorphic conditions in, 489–97
——, sillimanite zone, granulites and gneisses from, 958
DALY, M., *see* COWARD, N. P.
DARBYSHIRE, D. P. F., *see* ROOBOL, M. J.
databases, South America, mining information, 324
——, stratigraphical and palaeontological, 324
Dawros peridotite, Connemara, 63–73, map 65
——, younging directions in [discussion], 843–4
deep crust, British Isles, 117–9
deformation, exsolution and ordering in feldspar, 976
——, in rocks, electron optical studies of, 976
deformed alkali feldspar, recrystallization of, 976
——, K-feldspars, microstructure of, 975–6
$\delta^{13}C$, enrichment in migrated methane, 415–22
——, values in Precambrian, 6–8
DEMBICKI, H., Jr, *see* HORSFIELD, B.
DERBYSHIRE, E., *see* GOUDIE, A.
Devon S, rapid weathering by salt spray, 321
——, structure, 217–21
——, thrust tectonics, 215, map 216, 221 *et sqq*
Devon W, Hercynian phyllosilicate-rich ultramylonites of, 160–1
diagenesis, in Quaternary calcretes, 359–61
——, of clay minerals, 774–7
——, of coral-reef derived conglomerates, 405–7
——, of Jurassic grainstones, 233–5
——, of Miocene carbonates, Sicily, 340–6
——, of skeletal carbonates, Coralline Crag, 381–4
——, of Waitakere Limestone, 395–7
diamond exploration, garnet 'indicator' minerals in, 979
DICKIN, A. P. & JONES, N. W., isotopic evidence for the age and origin of pitchstones and felsites, Isle of Eigg, NW Scotland, 691–700 figs
DIETVORST, P., *see* TOURET, J.
DIMITROPOULOS, K. & DONATO, J. A., the gravity anomaly of the St George's Channel Basin, southern Irish Sea—a possible explanation in terms of salt migration, 239–44 figs
diorites, of SE Jersey, 921, map 922, 923–7, and mineralogy of, 927–9
DIXON, J. & WILLIAMS, G. D., brittle–ductile processes in granitoid mylonites [*abs*], 841
DONATO, J. A., MARTINDALE, W. & TULLY, M. C., buried granites within the Mid North Sea High, 825–37 figs
——, *see* DIMITROPOULOS, K.
DONOHUE, M. A., *see* BURT, T. P.
Dorset, S, groundwater flow in Chalk, 334
Dragsmark granites, alkali feldspar megacrysts in, 958
DROOP, G. T. R., *see* BAKER, A. J.
ductile–brittle deformation, inter-relationship with fluid flow, 841–2
DUNKLEY, P. N., *see* KOKELAAR, B. P.
DUNLOP, H. M., *see* FITTON, J. G.
Dunnage Mélange, mud–magma interactions in, 965–6
DUNNE, W. M., tectonic evolution of SW Wales during the Upper Palaeozoic, 257–65 figs
DURANT, G., *see* KOKELAAR, P.

DUYVERMAN, H. J., *see* HARRIS, N. B. W.
dykes, Black Stockarton Moor, Galloway, 669

earthquakes (shallow), and continental fault structure, 741–67
East Anglia, Lower Greensand aquifer, 333–4
Eastern Desert, Egypt, geology of, 77–78, map 76
——, ophiolitic mélange of, 79–81
Eastern Papua, Tertiary extension and volcanism, 968–9
Ebro Basin, *see* Scala Dei Group
eclogite facies, aqueous, and fluid inclusions, 959–60
Egypt, Pan-African structures, ophiolites, mélange, 75–95, map 76
Eigg, Isle of, NW Scotland, isotopic evidence for age and origin of pitchstones and felsites, 691–700
EL TAHIR, M. A., *see* BONATTI, E.
electron microscopy, use in metamorphic and structural studies, 975
ELEFTHERIOU, A., animal–sediment relations in sandy deposits [*abs*], 327–8
England, SW, basin dewatering pathways, 980–1
——, SW, metatourmalinite–hydrothermal breccia and Sn mineralization, 980
Eocene, deformation on continental margin SW of British Isles, 913–20
——, Maden Complex marginal basin, 966
——, sedimentation and tectonics, discussion, 319–20
Eocene–Oligocene, Scala Dei Group, 133, 140, 145
erosion, accelerated in lower Severn basin, 321
——, global patterns, 321
evolution, of CAM and C_4 photosynthetic systems, 19–21
——, of fish, 44–5
——, of pathways of anaerobic metabolism, 32–4
——, of present day brackish- and fresh-water faunas, 41–5

FARQUHARSON, G. W., HAMER, R. D. & INESON, J. R., an arc, back-arc system from the Cretaceous of the Northern Antarctic Peninsula [*abs*], 967
Fatimah suite, Rb-Sr data, 209
FAULKNER, H., water and sediment discharges following snowmelt and a spring rainstorm at Alkali Creek, western Colorado [*abs*], 321
fault zones, deep structure of, 757–60
FAWCETT, J. J., *see* ALLEN, J. M.
FENN, C. R., analysing proglacial streamflow series: some problems [*abs*], 322
FERGUSON, C. C., *see* LLOYD, G. E.
FERRY, J. M., regional metamorphism of the Vassalboro Formation, south-central Maine, USA: a case study of the role of fluid in metamorphic petrogenesis, 551–76 figs
Fiji platform, influence of marginal basin development on evolution of, 968
FISHER, R. V., a review of submarine volcanism, transport processes and deposits [*abs*], 965
FISK, M. R., FORD, C. E. & UPTON, B. G. J., experimental petrology of Piton des Neiges volcano, Reunion Island [*abs*], 326
Fiskenaesset, *see* Greenland, West
FITCHES, W. R., *see* RIES, A. C.
FITTON, J. G. & DUNLOP, H. M., geochemical and isotopic studies on the Cameroon line volcanoes, West Africa [*abs*], 326
——, *see* THIRLWALL, M. F.
FLETCHER, C. J. N. & REEDMAN, A. J., the development of tectonic talc rods at Tong Yang Mine, South Korea [*abs*], 979–80
FLINT, S., *see* CLEMMEY, H.
flow processes, in soils, 322
flow resistance and channel typology, 322
FLOYD, P. A., *see* WINCHESTER, J. A.
fluid inclusion evidence, for fluid movement in veins, 657–8
——, -absent metamorphism, 533–47
——, H_2O–CO_2 phase, genesis and mobility in Dalradian regional metamorphism, 577–99
——, in metamorphic petrogenesis, Vassalboro Formation, 560–5
——(s), and melting under upper amphibolite facies conditions 629–33
——(s), in metamorphism, 529–32
——(s), role in development of a granulite facies transition, 652–4
fluid inclusion, in high-grade anatectic metamorphites, 635–49
——, of aqueous eclogite facies, 959–60
——, St Austell granite, 299–306
fluid phase, origins of CO_2 in, during greenschist facies metamorphism, 593–4 [GREENSCHIST]
fluorite mineralization, South Pennine Orefield, 980
foramol limestone, New Zealand, 387, 393, 397–98
FORD, C. E., *see* FISK, M. R.
Fortuna Basin, conglomerates of, 401–11
FRANCIS, E. H., magma and sediment—II. Problems of interpreting palaeovolcanics buried in the stratigraphic column [President's anniversary address 1982], 165–83 figs
——, on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 521
FRENCH, H. M., *see* CLARK, M. J.
FRIEND, C. R. L., petrological studies of an Archaean sapphirine-bearing reaction zone, Bjørnesund, southern West Greenland [*abs*], 162

Frigg Field, generation of hydrocarbons, 461, and hydrocarbon migration, 465
FUGE, R., *see* ANDREWS, M. J.
——, *see* PHILLIPS, W. J.
FUNNELL, B. M., Palaeophysiology: the geological context [introduction to papers on: dimensions of palaeophysiology], 1–4 fig

GAGE, J. D., interaction of benthic animals with muddy sediments, especially in the deep sea [*abs*], 327
GAMBLES, P., alkali feldspar megacrysts in the Dragsmark granites (Stora Le-Marstrand Belt, SW Sweden)—phenocrysts or porphyroblasts? [*abs*], 958
GARDINER, A. T., *see* BURT, T. P.
GARDINER, C. M. K., geomorphology applied in an archaeological context: a case study of hillslope erosion on British earthwork sites [*abs*], 971
GARDINER, V., Channel typology and flow resistance in upland channels [*abs*], 322
garnet 'indicator' minerals, 979
gases, tracing migration of, 415–22
GASS, I. G., *see* AL-SHANTI, A. M.
GELMINI, R., *see* BONATTI, E.
geobarometry of Dalradian mafic granulites of E Glen Muick, 492–4
——, in reactions of micas, 162
geochemical prospecting, use of iodine in, 979
geochemistry, of Ben Hope Sill suite, Sutherland, 959
——, of Bodinayakkanur area, S India, 654
——, of Cameroon line volcanoes, 326
——, of diorites, SE Jersey, 929–33
——, of Highland Border Suite mafic rocks, 269–73
——, of metavolcanic amphibolites, 161–2
——, of oil-producing formations, Japan, 476–82
——, of ophiolite zones, Arabia, 871–4
——, of ophiolitic mafic rocks, Spain, 879–81
——, of petroleum, applied to basin studies, 413
——, of petroleum, in Southern Santos Basin, 423–30
——, of Proterozoic lavas, Arabia, 190–9
——, of Sabaloka Igneous Complex, Sudan, 246–8
——, Old Red Sandstone volcanic rocks, discussion, 315–8
geochronology, of pitchstones and felsites, Isle of Eigg, 692–4
geomorphology, applied, Kenya, 970
——, of floodplains, 321
geothermal systems, Krafla and Reykjanes, Iceland, 549–50
geothermometry, St Austell granite, 303–6
——, of Dalradian mafic granulites of E Glen Muick, 492–4
GIBB, F. G. F., *see* BENNETT, M. C.
GIBBONS, M. J., WILLIAMS, A. K., PIGOTT, N. & WILLIAMS, G. M., petroleum geochemistry of the Southern Santos Basin, offshore Brazil, 423–30 figs
GIBBONS, W. & MANN, A., metamorphism and mylonitization within the Mona complex of N Wales [*abs*], 160
GIBBS, A., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 522
GLASBY, G. P., *see* CRONAN, D. S.
Glen Kyllachy Granite, Grampian Highlands 47, map 50, 51 *et sqq*
——, discussion, 961–3
Glen Muick, Scotland, Grampian metamorphic conditions of Dalradian at, 489–97
GOFF, J. C., hydrocarbon generation and migration from Jurassic source rocks in the E Shetland Basin and Viking Graben of the northern North Sea, 445–74 figs
GOUDIE, A., BRUNSDEN, D., DERBYSHIRE, E. & COLLINS, D., the Karakoram project [*abs*], 322
GRAHAM, C. M., GREIG, K. M., SHEPPARD, S. M. F. & TURI, B., genesis and mobility of the H_2O–CO_2 fluid phase during regional greenschist and epidote amphibolite facies metamorphism: a petrological and stable isotope study in the Scottish Dalradian, 577–99 figs
——, discussion [FERRY, J. M.], 574
GRAHAM, R. H., *see* RIES, A. C.
granite, buried in Mid North Sea High, 825–37
——, Glen Kyllachy, Grampian Highlands, 47, map 50, 51 *et sqq*
——(s), southern Britain, Sr and Pb isotope work, 499–509
granulite facies, transition zone development and role of fluids in, 651–6
gravel mobility, 328
gravity profiles, St George's Channel basin, 241–2
——, Mid North Sea High, maps 831 & 832
Greenland, North, Caledonian nappes and Silurian turbidite deposition, 123–31
——, West, geochemistry and petrogenesis of metavolcanic amphibolites, 161–2
——, ——, petrological studies of Archaean sapphirine-bearing reaction zone, 162
greenschist and epidote amphibolite facies metamorphism, Scottish Dalradian, 577–99
GREIG, K. M., *see* GRAHAM, C. M.
GRENNE, T., *see* ROBERTS, D.
GRIFFITHS, D. H., *see* LONGSHAW, S. K.
GRIFFITHS, J. S., a geomorphological approach to highway drainage design in hot deserts [*abs*], 970
groundwater, developments in Wessex Water, 333
——, fresh and skimming of, 325
——, hydrochemistry, E Sussex, 333
——, Malaysia and Indonesia, 325
——, structural influences on flow of, 334

GUNN, J., applied Karst hydro-geomorphology: three examples from Ireland [*abs*], 971
GURNELL, A. M., spatial and temporal variations in suspended sediment concentration in a proglacial stream network [*abs*], 322

H_2O–CO_2, density inversion T_h histograms and high grade metamorphites, 645–7
——, fluid phase during regional metamorphism, 577–99
H_2O + K_2O- and CO_2-rich phases, role in development of granulite transition zone, 652–3
HAIGH, M. J., road-induced landslides in the Garhwal, Lesser Himalaya: morphology and prediction [*abs*], 970
HAILWOOD, E. A., the effects of bioturbation on the magnetic properties of sediments [*abs*], 328
HALE, M., *see* WRAITH, D.
HALE, N., *see* MOON, C.
HALLIWELL, R. A., *see* PITTY, A. F.
HAMER, R. D., *see* FARQUHARSON, G. W.
Hammamat Group, 83–7
Hampshire Basin, Eocene of, discussion, 319–20
HAMPTON, C. M. & TAYLOR, P. N., the age and nature of the basement of southern Britain: evidence from Sr and Pb isotopes in granites, 499–509 figs
HANSEN, A. & STYLES K. A., the significance of mass movement in the evolution of Hong Kong's terrain [*abs*], 970
HARRIS, A. L., HIGHTON, A. J., ROBERTS, A. M. & STOKER, M. S., on the Glen Kyllachy Granite and its bearing on the nature of the Caledonian Orogeny in Scotland [discussion of: van Breeman & Piasecki], 961–3
——, *see* ROBERTS, A. M.
HARRIS, N. B. W., DUYVERMAN, H. J. & ALMOND, D. C., the trace element and isotope geochemistry of the Sabaloka Igneous Complex, Sudan, 245–56 figs
HARRY, D. G., *see* CLARK, M. J.
HARTE, B., discussion [FERRY, J. M.], 575
——, discussion [RUMBLE & SPEAR], 627
HEADWORTH, M. G., the gravel aquifer at Dungeness, Kent [*abs*], 334
HEATON, B., effects of biological action on sediments from radionuclide studies [*abs*], 328
Heimaey, Saefell tuff-ring, 326
HERD, R. K., *see* WINDLEY, B. F.
HEY, R. D., river channel dynamics [*abs*], 321
Higher Himalaya, 855, map 856, 857
Highland Border, metamorphism in mafic and ultramafic rocks, 161
——, Suite, petrochemistry and tectonic significance of mafic rocks, 267–78 maps
HIGHTON, A. J., *see* HARRIS, A. L.
Himalaya, metamorphism and tectonics of, 849, map 850, 851 *et sqq*
HINDLE, W. H., *see* COLLEY, H.
HO, T. T. Y., *see* HORSFIELD, B.
HODKINSON, R., *see* CRONAN, D. S.
HOLDER, M. T., on convection and crystallization in the Criffel–Dalbeattie pluton [discussion of: Phillips, Fuge & Phillips], 311–3
HOLLAND, C. H., Soviet and British stratigraphical classifications compared, 845–7
HOLLAND, J. G., *see also* LAMBERT, R. ST J.
HOLLAND, T. J. B., aqueous eclogite facies fluid inclusions [*abs*], 959–60
Hollowbrook Formation, 147, 152 *et sqq*
HOLT, R. W. & WIGHTMAN, R. T., the role of fluids in the development of a granulite facies transition zone in S India, 651–6 figs
HORSFIELD, B., DEMBICKI, H., Jr & Ho, T. T. Y., some potential applications of pyrolysis to basin studies, 431–43 figs
HOSSACK, J. R., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 520
HOWELLS, M. F., *see* KOKELAAR, B. P.
HUCKERBY, J. A., structure and mineralization at the Mahd adh Dhahab gold mine, W Saudi Arabia [*abs*], 980
HUGHES, C. P., sources of stratigraphical and palaeontological information for S American countries [*abs*], 324
Hummah suite, Rb-Sr data, 206
HURST, J. M., MCKERROW, W. S., SOPER, N. J. & SURLYK, F., the relationship between Caledonian nappe tectonics and Silurian turbidite deposition in North Greenland, 123–31 figs
hydrocarbon generation (and migration), E Shetland Basin and Viking Graben, 445, map 446, 447 *et sqq*
hydrogeology, Central Alluvial Plain of Thailand, 324–5
——, of NW Bangladesh, 325
hydrology, Malaysian limestone aquifers, 321
hydrothermal fluids, and Sn mineralization, 980
——, in St Austell granite, 297, 300–8

Iceland, SW, Saefell tuff-ring, 326
——, submarine eruption of Surtla, 326
——, water-rock interaction in geothermal systems, 549–50
ignimbrites, Sudan, 252–3
IKE, E. C., the structural evolution of the Tibchi ring-complex: a case study for the Nigerian Younger Granite Province, 781–8 figs
IKIN, N. P., metamorphism in the Highland Border mafic and ultramafic rocks [*abs*], 161
——, petrochemistry and tectonic significance of the Highland Border Suite mafic rocks, 267–78 figs
India S, granulite facies transition zone, map, 651, 652

Indus–Zangbo Suture Zone, 854–5
INESON, J. R., *see* FARQUHARSON, G. W.
iodine, in geochemical prospecting, 979
Ireland, mantle inclusions in volcanic rocks, map 106, 107, 109, 110, 113
Irish Sea, see St George's Channel Basin
ISAAC, K. P., deformation and metamorphism in Hercynian phyllosilicate-rich ultra-mylonites from W Devon, SW England [*abs*], 160–1
——, on Eocene sedimentation and tectonics in the Hampshire Basin [discussion of: Plint], 319–20
isograds, inverse and divergent, Himalaya, 859, map 860
isotope geochemistry, of pitchstones and felsites, Isle of Eigg, 694–8
isotopic age, of Ardnish pegmatite, 816–8
Ivrea Zone, metamorphism of sapphirine-bearing rocks, 959

JACKSON, N. J., *see* ROOBOL, M. J.
Jahad suite, Rb-Sr data, 207–8
Japan, Neogene sedimentary basin, petroleum geochemistry, 475–87
JENKINS, A., *see* KAY, D.
Jersey, diorites in SE of, 921 map 922, 923–7
JOHNSTON, C., *see* ANDREWS, M. J.
JONES, N. W., *see* DICKIN, A. P.
Juqjuq suite, Rb-Sr data, 209
Jurassic, grainstones, 229–33
——, hydrocarbon source rocks of northern North Sea, 448–9
——, rocks of Antarctic Peninsula, palaeomagnetism, 945–54

K-feldspars, microstructure of, 975
KALAUGHER, P. G., stereoscopic fusion of a photographic image with a directly observed view: applications to geomorphology [*abs*], 971
Kameda oilfield, Japan, 480–1
Karakoram Project, 322
Karakorum, rocks and age of, 852–3
KAY, D., MCDONALD, A. & JENKINS, A., upland catchment research: an integrated perspective [*abs*], 970
KENOLTY, N., *see* CHADWICK, R. A.
KEY, C. H., *see* BISHOP, A. C.
KHEDR, E., paragenesis of the ferriferous ooids of Egypt: a microanalytical approach [*abs*], 980
Kimmeridge Clay, as hydrocarbon source rock, 448 *et sqq*
KIRKBY, M. J. modelling slope development in S Wales: Savigear reviewed [*abs*], 321–2
——, *see* CRABTREE, R. W.
Knapdale and Tayvallich, SW Scotland, Dalradian of, 577, maps, 578–9, 580
KNEDLER, K. E., *see* CRONAN, D. S.
KNIPE, R., an introduction to electron microscopy [*abs*], 975
KNIPE, R. J., ductile to brittle transition in thrust sheets [*abs*], 841
——, *see* COWARD, M. P.
Kohistan–Ladakh arc and Trans-Himalayan plutonic belt, 853–4
KOKELAAR, B. P., the mechanism of Surtseyan volcanism, 939–44 figs
——, HOWELLS, M. F., BEVINS, R. E., ROACH, R. A. & DUNKLEY, P. N., the Ordovician marginal basin of Wales [*abs*], 965
KOKELAAR, P. & DURANT, G., the submarine eruption and subsequent history of Surtla, SW Iceland [*abs*], 326
KUSZNIR, N. J. & PARK, R. G., a mathematical model of the brittle–ductile transition within the lithosphere [*abs*], 840

Ladakh, *see* Higher Himalaya
Lake Baikal, 44
LAMBERT, R. ST J., geochemical comparison of the Dalradian Leven Schists and the Grampian Division Monadhliath Schists [reply to discussion], 163–4
landforms, ice-cored, 322
landslides, lessons from, 970
LANGHORNE, D. N., observation of gravel mobility and possible biological effects [*abs*], 328
lapilli, and recognition of soft-sedimentary deformation, 789–94
layering, in diorites, SE Jersey, 922–7
LEACH, C., recrystallization of deformed alkali feldspar in a Tertiary granite [*abs*], 976
LEAKE, R. C. & COOPER, C., the Black Stockarton Moor subvolcanic complex, Galloway, 665–76 figs
LEGGETT, J. K., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 520
LEVI, B., *see* ABERG, G.
LEWIN, J., process and form in floodplain geomorphology [*abs*], 321
LEYS, C. A., volcanic and sedimentary processes during formation of the Saefell tuff-ring, Heimaey, SW Iceland [*abs*], 326
Limpopo Belt, sapphirine/kornerupine-bearing rocks, 958
LIPPARD, S. J., Cretaceous high pressure metamorphism in NE Oman and its relationship to subduction and ophiolite nappe emplacement 97–104 figs
LITHERLAND, M., on a geochemical comparison of the Dalradian Leven Schists and the Grampian Division Monadhliath Schists of Scotland [discussion of: Lambert, Holland & Winchester], 163–4
LIVINGSTONE, D. R., invertebrate and vertebrate pathways of anaerobic metabolism: evolution-

ary considerations, 27–37 figs
LLOYD, C. E. & FERGUSON, C. C., applications of backscattered SEM in structural geology [*abs*], 975
—— & ——, [conference report on] relationship between brittle and ductile processes in rocks, 839–42
Loch Quoich Line, 883–5, and structural interpretation of, 890–1, and eastern area of, geology, 885, map 887, 888–90, *see also* 961–2
LONGSHAW, S. K. & GRIFFITHS, D. H., a palaeomagnetic study of Jurassic rocks from the Antarctic Peninsula and its implications, 945–54 figs
LORENZ, B. E., mud–magma interactions in the Dunnage Mélange, Newfoundland [*abs*], 965–6
LORIMER, G. W., *see* CHAMPNESS, P. E.
Lower Greensand, aquifer, 333–4
——, Himalaya, 857
——, Palaeozoic rocks, beneath southern England, 904–5
LYELL MEDAL presented to G. P. L. WALKER, 329–30; L. FUND [moiety] presented to D. G. ROBERTS, 332; L. FUND [moiety] presented to P. W. FRANCIS & R. S. THORPE, 332

MCCLAY, K. R., *see* COWARD, M. P.
MCDONALD, A., *see* KAY, D.
MACDONALD, D. I. M. & STOREY, B. C., processes of formation and infilling of a Mesozoic marginal basin on the island of South Georgia [*abs*], 967
MACGREGOR, A. R., the Waitakere Limestone, a temperate algal carbonate in the lower Tertiary of New Zealand, 387–99 figs
MCKERROW, W. S., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 520–1
——, *see* HURST, J. M.

Maden Complex, of Turkey, 966
magma and sediment—II, 165–83
MÄCKEL, R., applied geomorphology in the semi-arid lands of northern Kenya [*abs*], 970
Maltese Islands, coralline algal biostrome, 365–6
——, correlation with Sicilian Miocene, 346–7
Maracaibo Basin, 43
MANN, A., *see* GIBBONS, W.
marginal basin, and volcanic evolution of Fiji Platform, 968
——, ensialic, Southern Andes, 967
——, generation, in Chile, 966–7
——, Maden Complex, Turkey, 966
——, Mesozoic, South Georgia, 967
——, Taupo volcanic zone, 968
——(s), adjacent to Tonga–Kermadec ridge, 968
——(s), thermal behaviour and volcanism in, 969
——(s), volcanogenic sedimentation model, 967–8
MARINELLI, G., *see* BONATTI, E.
MARTINDALE, W., *see* DONATO, J. A.
MASSON, D. G. & PARSON, L. M., Eocene deformation on the continental margin SW of the British Isles, 913–20 figs
MATTER, A., *see* ALLEN, P. A.
Maydan syncline, Oman, map 288, 289–92
Meatiq Group, 78–9
Mesozoic, plant–atmosphere interactions in, 15–6
——, structural evolution of southern England in, 906–10
metamorphic evolution, of garnet-cordierite gneisses, Indonesia, 957
——, of sapphirine-bearing rocks, Ivrea Zone, 959
metamorphic fluids, factors controlling distribution of, 545–7
metamorphic kinetics, 162
metamorphic reactions, and pressure solution, 726–7
Metamorphic studies, research in progress [conference report], 955–7
metamorphism, and tectonics of the Himalaya, 849–65
——, application of SEM in hydrothermal experimental studies, 975
——, during and after cooling, Artfjället gabbro, 976
——, Eastern Desert, 91
——, fluid absent, 533–47
——, fluids in [introduction to papers on], 529–32
——, Grampian conditions of, Glen Muick, 489–97
——, high grade, in Dalradian pelites, Connemara, 957–8
——, in Hercynian phyllosilicate rich ultramylonites, 160–1
——, in Highland Border mafic and ultramafic rocks, 161
——, in upper amphibolite facies, 629–33
——, low grade, Tintagel, 959
——, Mona complex, 160
——, of Cu deposits, Spain, 980
——, of granulite facies and granite melts, Scourian Complex, 958
——, of the Scourie Complex, 958
——, Oman, 100–101
——, progressive, in simple rock systems, 534–7
——, quartz veins and devolatilization during, 657–63
——, regional, of Vassalboro Formation, Maine, 551–76
——, regional greenschist and epidote amphibolite facies, Scottish Dalradian, 577–99
——, regional oxygen-isotope equilibration and permeability enhancement, 619–28
——, role of phyllosilicates in, 323
——, TEM study of quartzites in low grade, 976
metapelites and metabasites, fluid inclusion in,

635–49
microprocessors, and numerical models for pumping test analysis, 973
Mid North Sea High, buried granites in, 825–8, map 829, 830 *et sqq*
Middle Dalradian, of Connemara, 63, map 64, 66
Middle Devonian, shoreline, 147, maps 149, 154–7
MILLINGTON, A. C., soil erosion processes in Sierra Leone [*abs*], 970
MILNE, D. M., STONER, R. F. & BAKIEWICZ, W., fresh groundwater skimming [*abs*], 325
MILSON, J., Tertiary extension and volcanism in Eastern Papua [*abs*], 968–9
mineral phase transformations, 975
Miocene, of SE Sicily, 335–50
——, of SE Spain, 401–11
MITCHELL, A. H. G., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 521–2
model for vein formation and fluid loss, 661–2
model pelitic systems, and temperature–water activity, 629–33
Moine, of Northern Highlands of Scotland, and Loch Quoich Line, 883, map 884, 885, 886, map 887, 88 *et sqq*
Moine rocks, Precambrian pegmatite dated in, 813, map 814, 815 *et sqq*
Moine thrust belt, 795, map 796, 797–9
——, and Caledonides, 804–7
Moine Thrust Zone, deep structure model of [discussion], 519–25
Mona complex, N Wales, 160
Monte Carruba Formation, 338–40
MOON, C. & HALE, N., volatile pathfinder elements in the search for mineralized districts and deposits [*abs*], 979
MOORBY, S. A., *see* CRONAN, D. S.
MOORE, J. McM., mineralization and structure in the S Arabian Shield: a study in satellite image interpretation [*abs*], 981
MOORE, P. D., plants and the palaeoatmosphere, 13–25 figs
'Morarian Orogeny', 821–2
'Morarian' pegmatites, 815
MOTTERSHEAD, D. N., rapid bedrock weathering by coastal salt spray, S Devon [*abs*], 321
MURCHISON MEDAL presented to D. FLINN, 330–1; M. FUND presented to R. B. RICKARDS, 331–2
MURPHY, R. W., discussion [SIBSON], 766
MURRELL, S. A. F., brittle and ductile processes in rocks as a function of effective pressure, temperature and strain rate [*abs*], 840
MURRELL, S. A. F. *see* TAHSEEN, M.

Nahuelbuta Mountains iron formation, 981
NAMMARI, S. S. A., *see* PURI, S.
neomorphic spar, in Jurassic grainstones, 231–3
NICHOLSON, R., the formation of minor sheet intrusions [*abs*], 326
Nigerian Younger Granite Province, see Tibchi ring complex
NIXON, P. H., garnet 'indicator' minerals used in diamond exploration [*abs*], 979
'nodule-province', *see* volcanic rocks, inclusions in
North Devon, Middle Devonian shoreline, 147, maps 149, 154–7
North Sea, E Shetland Basin and Viking Graben, hydrocarbons in, 445, map 446, 447 *et sqq*
Northern Suture, of Himalaya, 853
NORTON, M., deformation, exsolution and ordering in feldspar from mylonitized granite [*abs*], 976
Norway, Caledonian volcanism, 326
NOWELL, A. R. M., measuring and modelling organism effects on sediment transport [*abs*], 328
NYSTROM, J., *see* ABERG, B.

ocean ridges, 704–6
O'HARA, M. J., *see* BARNICOAT, A. C.
oilfields, in Neogene, Japan, map 475, 476, 480–1, 485
olivine, transformation to spinel, 975
Oman, blueschists, 98–100
——, Cretaceous high-pressure metamorphism in, 98–101
——, ophiolite–sheeted dyke complex, 287, map 288, 289–92
Oman mountains, geological setting 97, maps 98
ophiolite nappe emplacement, Oman, 97–104
ophiolite zones, Arabian shield, 870–4
ophiolites, Himalaya, 854, 855, 857, 861
ophiolitic mafic rocks, Ordenes Complex, 877, 878
ophiolitic mélange, Egypt, 79–81
——, zones of easternmost Arabian shield 867–76
Ordenes Complex, Spain, 877, map 878
Ordovician, Borrowdale Volcanic Group, 511–2, map 513, 514 *et sqq*
——, marginal basin of Wales, 965
——, marginal basin development, Norwegian Caledonides, 966
osmotic regulation, and evolution of brackish- and fresh-water faunas, 39–46
OTTEN, M. T., metamorphism and deformation during and after cooling of the Artfjället gabbro (Swedish Caledonides) [*abs*], 976
OTTONELLO, G., *see* BONATTI, E.
oxygen-isotope equilibration, during regional metamorphism—correlation with enhanced permeability, 625–6
OYARZUN, R. & CLEMMEY, H., geological setting of the Nahuelbuta Mountains iron formations: south/central Chile [*abs*], 981

P–T conditions of metamorphism, Dalradian, Knapdale and Tayvallich, 580
——, interpretation of fluid inclusion data, 647–8
palaeoatmosphere, 13–25
——, and CAM, C_4 photosynthetic systems, 21–2
——, and plant physiology, 2–3
palaeogeography, of Central Mediterranean, 347–8
palaeomagnetic study, Jurassic rocks of Antarctic Peninsula 945–54
palaeovolcanics, buried in stratigraphic column, 165–83
Palaeozoic, early, marginal basin of S China, 966
PAN, G., the early Palaeozoic marginal basin of S China [*abs*], 966
Pan-African structures, of Eastern Desert, Egypt, 91–3
paragenesis, of ferriferous ooids, Egypt, 980
PARK, C. C., palaeohydrologic reconstruction from stratigraphic evidence: a case study of prehistoric irrigation canals in Peru [*abs*], 321
PARK, R. G., *see* KUSZNIR, N. J.
PARKER, A., ALLEN, J. R. L. & WILLIAMS, B. P. J., clay mineral assemblages of the Townsend Tuff Bed (Lower Old Red Sandstone), South Wales and the Welsh Borders, 769–79 figs
PARSON, L. M., *see* MASSON, D. G.
PASSCHIER, C. W., the development of shear bands in the brittle–ductile transition along a flat-lying mylonite zone [*abs*], 841
pathfinder elements, volatile, 979
pathfinder geochemistry, in prospecting, 979
PEDLEY, H. M., the petrology and palaeoenvironment of the Sortino Group (Miocene) of SE Sicily: evidence for periodic emergence, 335–50 figs
peridotites, Zabargad (St John's) Island, 679–80
Peru, palaeohydrologic reconstruction using stratigraphic evidence, 321
——, tectonic and magmatic events in Central Andes, 279, map 280, 284–5
petrogenesis of Dalradian albite porphyroblast schists, 610–16
petroleum geochemistry, in Neogene sedimentary basin, Japan, map 475, 476 *et sqq*
——, Southern Santos Basin 423–30
——, using pyrolysis, 432–3
PHILLIPS, N., *see* PHILLIPS, W. J.
PHILLIPS, W. J., FUGE, R. & PHILLIPS, N., convection and crystallization in the Criffel–Dalbeattie pluton [reply to discussion], 311–3
PIASECKI, M. A. J., *see* VAN BREEMEN, O.
PIGGOTT, N. *see* GIBBONS, M. J.
pitchstones and felsites, of Isle of Eigg, 691, map 692
PITMAN, G. K., the hydrogeology of NW Bangladesh [*abs*], 325
Piton des Neiges, experimental petrology of volcano, 326
PITTY, A. F., TERNAN, J. L., HALLIWELL, R. A., WHITTEL, P. A. & CROWTHER, J., geographical analysis of residuals from karst water temperature altitude gradients in NW Yorkshire [*abs*], 322
Pleistocene, reef carbonates of Zabargad (St John's) Island, 686–7, 689
PLINT, A. G., Eocene sedimentation and tectonics in the Hampshire Basin [reply to discussion], 319–20
Pliocene, skeletal carbonates from, 377–85
'plumbotectonics', of English granites, 503–5
Porcupine Sea Bight, southern deformation in, 913, map 914, 917, 918
porosity evolution, and diagenetic history of Jurassic grainstones, 233–5
POWELL, D., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 524 fig
——, BROOK, M. & BAIRD, A. W., structural dating of a Precambrian pegmatite in Moine rocks of northern Scotland and its bearing on the status of the 'Morarian Orogeny', 813–23 figs
POWELL, R., fluids and melting under upper amphibolite facies conditions, 629–33 figs
——, geobarometry using reactions involving micas [*abs*], 162
Precambrian, anoxia and anaerobic metabolism, 3
——, atmospheres, 2
——, dated pegmatite in Moine rocks, Scotland, map 814, 815–6
——, $\delta^{13}C$ values, 6–8
——, Egypt, Pan-African structures in, 75–6, 91–3
——, microbial communities, 5–12
——, of the Egyptian Shield, map 682
——, rocks, beneath southern England, 905–6
PRESIDENT'S AWARD presented to C. H. DONALDSON, 332–3
PRESIDENT'S AWARD presented to R. J. KNIPE, 332
pressure solution, in nature, theory and experiment, 725–40
PRIMMER, T. J., low-grade metamorphism of aluminous slates from Tintagel, SW England [*abs*], 959
Proterozoic, late, Arabian lavas of, 185, map 187, 188 *et sqq*
——, Arabian volcano-sedimentary belts, Rb-Sr isotope study, 206–12
Proterozoic, Upper, of easternmost Arabian shield, 867–70
PSUTY, R., coastal management programmes on the Eastern seaboard of the USA [*abs*], 971
PURI, S. & NAMMARI, S. S. A., recent studies of the Lower Greensand aquifer of East Anglia [*abs*], 333–4

pyrolysis, of sedimentary organic matter, application to basin studies, 431–43

quartz veins, and devolatilization during metamorphism, 657–8, map 659, 660 *et sqq*
quartzites, TEM study of, 976
Quaternary, calcrete in limestones, 351–63

radon, in karst waters, 322
RAMSAY, C. R., *see* ROOBOL, M. J.
RAMSDEN, A., online mining information on South America [*abs*], 324
RANKIN, A. H., *see* ALDERTON, D. H. M.
Rb-Sr isotope work, Glen Kyllachy Granite, 53–5
——, Proterozoic volcano-sedimentary belts, Central Arabia, 206–12
——, Sabaloka Igneous Complex, Sudan, 248–51
REEDMAN, A. J., *see* FLETCHER, C. J. N.
reef frameworks, adaptive significance, 374–5
——, branching, 370–2
——, crustose, 365–70
regional heat flow, and continental fault structure, 741, map 742
Reunion Island, see Piton des Neiges
rheology, of continental crust and ocean lithosphere, 702–3
——, of fault zones, 748
rhyolites, Sudan, 251–2
RIDLEY, J., amphibole zonation and the dynamic evolution of a blueschist terrain, Syros, Greece [*abs*], 161
RIES, A. C., SHACKLETON, R. M., GRAHAM, R. H. & FITCHES, W. R., Pan-African structures, ophiolites and mélange in the Eastern Desert of Egypt: a traverse at 26°N, 75–95 figs
RIGBY, S., basin dewatering pathways in SW England [*abs*], 980–1
ring fractures, Tibchi ring-complex, 786–7
river channel dynamics, 321
river solute loads, 321
ROACH, R. A., *see* KOKELAAR, B. P.
ROBERTS, A. M. & HARRIS, A. L., the Loch Quoich Line—a limit of early Palaeozoic crustal reworking in the Moine of the Northern Highlands of Scotland, 883–92 figs
ROBERTS, A. M., *see* HARRIS, A. L.
ROBERTS, D., GRENNE, T. & RYAN, P. D., Ordovician marginal basin development in the Central Norwegian Caledonides [*abs*], 966
ROBERTSON, A. H. F., *see* AKTAS, G.
ROLLINSON, H. R., granite melts produced during the granulite facies metamorphism of the Scourian Complex, NW Scotland [*abs*], 958
ROOBOL, M. J., RAMSAY, C. R., JACKSON, N. J. & DARBYSHIRE, D. P. F., late Proterozoic lavas of the Central Arabian Shield—evolution of an ancient volcanic arc system, 185–202 figs
ROTHERY, D. A., the base of a sheeted dyke complex, Oman ophiolite: implications for magma chambers at oceanic spreading axes, 287–96 figs
ROTHSTEIN, A. T. V., on younging directions in the Dawros peridotite, Connemara [discussion of: Bennett & Gibb], 843–4
RUBIE, D. C., discussion [SIBSON], 766
RUMBLE, D., III & SPEAR, F. S., oxygen-isotope equilibration and permeability enhancement during regional metamorphism, 619–28 figs
RUSHTON, K., numerical pumping test analysis using microprocessors [*abs*], 973
RUSSEL, M. J., the origin of sediment-hosted stratiform metalliferous ores [conference report], 971–2
RUTTER, E. H., experimental static recrystallization and grain growth of calcite [*abs*], 161
——, pressure solution in nature, theory and experiment, 725–40 fig
——, the brittle to cataclastic flow transition in experiments and the occurrence of cataclastic deformation in nature [*abs*], 840
RYAN, P. D., *see* ROBERTS, D.

Sabaloka Igneous Complex, Sudan, 245, map 246, 247 *et sqq*
SAFSTROM, A., *see* ABERG, B.
Saih Hatat window, blueschists of, 97, maps 98, 100, 103
St Austell granite, 297, map 298
St George's Channel Basin, 239, map 240, 241 *et sqq*
St John's Island, see Zabargad
Saline (Fife), volcaniclastic pile, 165–6
salinity, distribution of species in relation to, 39–41
salt migration, within basin, 242–3
SANTACROCE, R., *see* BONATTI, E.
SANTISTEBAN, C. & TABERNER, C., shallow marine and continental conglomerates derived from coral reef complexes after desiccation of a deep marine basin: the Tortonian–Messinian deposits of the Fortuna Basin, SE Spain, 401–11 figs
sapphirine-bearing rocks, Ivrea Zone, 959
Sarmatic Basin, 43–4
Saudi Arabia, W, gold mineralization and structure, 980
SAUNDERS, A. D. & TARNEY, J., geochemical characteristics and evolution of basaltic volcanism within back-arc basins [*abs*], 969
Scala Dei Group, alluvial fan in, 133, 135, 144, 145
SCHOELL, M., isotope techniques for tracing migration of gases in sedimentary basins, 415–22 figs
Scotland, Black Stockarton Moor subvolcanic complex, 665, maps 666 & 667, 668 *et sqq*
——, dated pegmatite in Moine rocks, 816–23
——, Glen Kyllachy Granite, 47, map 50, 51 *et sqq*

Scotland, Grampian metamorphic conditions, Dalradian, 489–97
——, Highland Border, metamorphism in mafic and ultramafic rocks, 161
——, Isle of Eigg, isotopic evidence for age and origin of pitchstones and felsites, 691–700
——, Loch Quoich line and Moine, 883–92
——, mantle inclusions in volcanic rocks, map 106, 107–15
——, Moine thrust zone, 795–811
——, NW, exsolution in a clinopyroxene from Scourie, Sutherland, 162
——, Tomatin (Findhorn) Granite, 47, map 50
——, Upper Findhorn metasediments, 49, map 50
Scourian Complex, granite melts from granulite facies metamorphism, 958
Scourie, *see* Scotland
sediment transport, organism effects on, 328
SEIFERT, W. K., applications of biological markers to problems of correlation in different basins [*abs*], 413–4
seismic reflection profiles, deep, southern England, 893, map 894, 895–99
seismic stratigraphy, northern Bay of Biscay, 915, 916, 919
seismicity, in relation to continental fault structure, 754–7
SEM, backscattered, applications in structural geology, 975
——, application in hydrothermal experimental studies, 975
Semail ophiolite, 97, map 98
SHACKLETON, R. M., *see* RIES, A. C.
SHARASKIN, A. Y., *see* SYCHEV, P. M.
SHARMA, R. S., mineral parageneses and metamorphic conditions in metasedimentary enclaves in the Archaean Gneiss Complex of NW India [*abs*], 957
sheet intrusions, 326
——, Black Stockarton Moor, Galloway, 669–71
sheeted dyke complex, Oman, 287, map 288, 289–92
SHEPPARD, S. M. F., *see* GRAHAM, C. M.
shoreline facies Middle Devonian, North Devon, 147, maps 149, 154–7
SIBSON, R. H., continental fault structure and the shallow earthquake source, 741–67 figs
Sicily, basal Etnaean tholeiites, 326–7
——, SE, petrology and paleoenvironment, Sortino Group, 335–50
SIGURDSSON, H. & CAREY, S., a model of volcanogenic sedimentation in marginal basins [*abs*], 967–8
SILLS, J. D., sapphirine-bearing rocks from Finero, Ivrea Zone: origin and metamorphic evolution [*abs*], 959
Silurian turbidites, North Greenland, 124–5
SIMPSON, C., the brittle–ductile transition in sheared granodiorite, Roses, NE Spain [*abs*], 841
SIMPSON, R. W. & WORTHINGTON, P. F., hydrogeological investigations of the Central Alluvial Plain of Thailand [*abs*], 324–5
slope development modelling, 321–2
Sm-Nd garnet age of Borrowdale Volcanic Group, 511–8
SMART, P., the significance of radon in karst waters [*abs*], 322
SMETTEM, K. R. J., preferential flow processes in well-structured soils [*abs*], 322
soft-sedimentary folding, revealed by lapilli, 790–1
soil moisture patterns and topography, 322
soil water sampling by ion exchange, 322
SOPER, N. J. & BARBER, A. J., a model for the deep structure of the Moine Thrust Zone [replies to discussion], 519–25
——, *see* HURST, J. M.
Sortino Group, 335
Soufriere Volcano, St Vincent, eruption, 325–6
South America, online mining information, 324
——, sources of stratigraphical and palaeontological information, 324
South Atlantic Basin, 44
South Georgia, Mesozoic marginal basin, 967
Southern Andes, marginal basin, 967
southern England, crustal structure beneath, 899–906
Southern Santos Basin, petroleum geochemistry, 423, map 424, 425 *et sqq*
Soviet stratigraphical classification, 845–6
Spain, alluvial fan of the Scala Dei Group, 133–45
——, brittle–ductile transition in sheared granodiorite, Roses, 841
——, marine and continental conglomerates of Miocene, 401–11
SPARKS, S., *see* BRAZIER, S.
sparry ferroan-calcites, petrography of, 231–3
SPEAR, F. S., *see* RUMBLE, D., III
SPONEMANN, J., planation surfaces of East Africa in relation to tectonics [*abs*], 970
Sr and Pb isotope work, on granites, southern Britain, 499–509
Sr isotopic evolution, of rock units southern Britain, 501–2
stable isotopes, used in gas migration studies, 415–21
STOKER, M. S., *see* HARRIS, A. L.
STONER, R. F., *see* MILNE, D. M.
STOREY, B. C., *see* MACDONALD, D. I. M.
stratiform metalliferous ores, origin of sediment-hosted, 971–2
stratigraphical classification, Soviet and British systems compared, 845–7
stream flow accumulation patterns, Colorado, 321
stream network form, 321

Strontian Granodiorite, metamorphic environment of, 162
structure, of Highlands, 802–4
STYLES, K. A., *see* HANSEN, A.
subduction zones, 711–5
Sudan, *see* Sabaloka Igneous Complex
SURLYK, F., *see* HURST, J. M.
Surtla, SW Iceland, submarine eruption, 326
Surtseyan volcanism, mechanism, 939–44
Sussex, E, hydrochemistry of groundwater, 333
SUTHERLAND, D. G., geomorphology and mineral exploitation [*abs*], 970
Sutherland, *see* Scotland
SUTHREN, R. J. & BEVINS, R. R., Caledonian volcanism in Bømlo, Norway [*abs*], 326
SUTTON, J., on a model for the deep structure of the Moine Thrust Zone [discussion of: Soper & Barber], 524
SVEINBJORNSDOTTIR, A. E., water–rock interaction in Krafla and Reykjanes geothermal systems [*extended abs*], 549–50
Sweden, *see* Dragsmark granites
SWINNERTON, C. J., groundwater developments in Wessex Water [*abs*], 333
SYCHEV, P. M. & SHARASKIN, A. Y., heat flow and magmatism in the back-arc basins of the northwestern Pacific [*abs*], 969
Syros, Greece, amphibole zonation and blueschist terrain, 161

TABERNER, C., *see* SANTISTEBAN, C.
TAGUCHI, K., petroleum geochemistry in the Neogene sedimentary basin of Japan, with special reference to primary migration, 475–87 figs
TAHSEEN, M. & MURRELL, S. A. F., thermal behaviour and volcanism in marginal basins [*abs*], 969
TARNEY, J., *see* BARTHOLOMEW, D. S.
TARNEY, J., *see* SAUNDERS, A. D.
Taupo volcanic zone, New Zealand, 968
TAVIANI, M., *see* BONATTI, E.
TAYLOR, P. M., *see* HAMPTON, C. M.
tectonic evolution, SW Wales, 258–64
——, of Himalayan mountain range, 851–2
tectonic talc rods, South Korea, 979–80
Tenerife, phonolitic pumice deposits, 325
TERNAN, J. L., *see* PITTY, A. F.
Tertiary, limestone, New Zealand, 387–99
——, oilfields, Japan, map 475, 476, 480–1, 485
Thailand, hydrogeology of, 324–5
thermal history, hydrocarbon source rocks, northern North Sea, 449–57
thin foils, microanalysis of, 975
THIRLWALL, M. F., implications for Caledonian plate tectonic models of chemical data from volcanic rocks of the British Old Red Sandstone [reply to discussion], 315–8
—— & FITTON, J. G., Sm-Nd garnet age for the Ordovician Borrowdale Volcanic Group, English Lake District, 511–8 figs
THOMPSON, A. B., fluid-absent metamorphism, 533–47 figs
THOMSON, J., *see* CRONAN, D. S.
thrust tectonics, in Devon, 215, map 216, 221 *et sqq*
——, of Moine thrust belt, 795–97, maps 798 & 799
——, Zambian Copperbelt, 979
Tibchi ring-complex, 781–2, maps 783 & 784
Tintagel, low grade metamorphism from, 959
Tomatin (Findhorn) Granite, 47, map 50
Tonga–Kermadec Ridge, sedimentation on, 968
Tortonian–Messinian, of Sicily, map 336
——, of SE Spain, 401, map 402 & 404
TOURET, J. & DIETVORST, P., fluid inclusions in high-grade anatectic metamorphites, 635–49 figs
Townsend Tuff Bed, 769, maps 770 & 771
Tsidjiore Nouve glacier, glacial outburst, 321
——, suspended sediment in proglacial streams, 322
——, variations in proglacial stream flow, 322
TUBB, C. D. N., give your calculator a busman's holiday! Field uses of programmable handheld calculators [*abs*], 973
Tuleih syenite, Sudan, 254
TULLY, M. C., *see* DONATO, J. A.
TUNBRIDGE, I. P., the Middle Devonian shoreline in North Devon, England, 147–58 figs
TURCOTTE, D. L., Mechanisms of crustal deformation [thirty-sixth William Smith Lecture], 701–24 figs
TURI, B., *see* GRAHAM, C. M.
TURNER, B., uranium mineralization in the Karroo Basin, South Africa [*abs*], 981
TURNER, P., *see* CLEMMEY. H.
TYLER, I. M., *see* ASHWORTH, J. R.

upper amphibolite facies, fluids and melting, 629–33
Upper Findhorn metasediments, 49, map 50
Upper Findhorn region, 47, 49, map 50
upper mantle, British Isles, 115–17
——, Zabargad (St John's) Island, 677, 679–80
Upper Palaeozoic, basalts, mantle inclusions in, 105–121, map 106
——, tectonic evolution of SW Wales in, 257, map 258, 259 *et sqq*
Upper Palaeozoic rocks, beneath southern England, 903–4
UPTON, B. J. G., ASPEN, P. & CHAPMAN, N. A., the upper mantle and deep crust beneath the British Isles: evidence from inclusions in volcanic rocks, 105–21 figs
——, *see* FISK, M. R.

Uranium mineralization, South Africa, 981

VAN BREEMEN, O. & PIASECKI, M. A. J., the Glen Kyllachy Granite and its bearing on the nature of the Caledonian Orogeny in Scotland, 47–62 figs

—— & ——, the Glen Kyllachy Granite and its bearing on the nature of the Caledonian Orogeny in Scotland [reply to discussion], 961–3

VAN DER MOLEN, I., boudinage and pinch-and-swell at Søndestrøm Airbase, W Greenland [*abs*], 840

Variscan deformation, SW Wales, 262–4

Vassalboro Formation, of Maine, USA, regional metamorphism of, 551, map 552, 553 *et sqq*

volcanic activity, growth by, 168–74

——, of Surtsey, 939–44

volcanic arc system, Central Arabia, 185, 186, map 187, 192–4

volcanic processes, Saefell, 326

volcanic rocks, erosion of, 174

——, in Bømlo, Norway, 326

——, inclusions in, British Isles, 105–15

——, of Old Red Sandstone, discussion, 315–8

——, sedimentation of, 174–8

——, submarine crystallization of, 326–7

volcanism, and Tertiary extension, Eastern Papua, 968–9

——, submarine and transport processes and deposits, 965

volcanoes, Cameroon line, 326

volcanogenic sedimentation, model, 967–8

Waitakere Limestone, 387–99

Wales, Ordovician marginal basin of, 965

——, S and borders, Townsend Tuff Bed clay minerals, 769–79

——, SW, Upper Palaeozoic tectonic evolution of, 257, map 258, 259 *et sqq*

WALLING, D. E. & WEBB, B. W., global patterns of erosion: a changing perspective [*abs*], 321

WALTHAM, A. C., cave development and valley excavation in the Yorkshire Dales, [*abs*], 322

water–rock interaction, in geothermal systems Iceland, 549–50

WATKINS, K. P., petrogenesis of Dalradian albite porphyroblast schists, 601–18 figs

WATKINS, M., special features of the development of ground water in the coastal and alluvial aquifers of Malaysia and Indonesia [*abs*], 325

weathering, by salt spray, 321

WEAVER, B. L., geochemistry and petrogenesis of metavolcanic amphibolites from Fiskenaesset, Southern West Greenland [*abs*], 161–2

WEBB, B. W., solute loads and chemical denudation at national and local levels [*abs*], 321

——, *see* WALLING, D. E.

WELLS, M. K. & CRISTOFOLINI, R., crystallization of teschenitic mineral assemblages in a submarine facies of basal Etnaean tholeiites, Acitrezza, Sicily [*abs*], 326–7

WHITE, J., *see* WHITE, S. H.

WHITE, S. H., electron optical studies of deformation in rocks [*abs*], 976

—— & WHITE, J., inter-relationship between ductile–brittle deformation and fluid flow in major fault zones [*abs*], 841–2

WHITTAKER, A., *see* CHADWICK, R. A.

WHITTEL, P. A., *see* PITTY, A. F.

WIGHTMAN, R. T., *see* HOLT, R. W.

WILLIAME, C., microstructure of experimentally deformed K-feldspars [*abs*], 975–6

WILLIAMS, A. K., *see* GIBBONS, M. J.

WILLIAMS, B. P. J., *see* PARKER, A.

WILLIAMS, G. D., *see* DIXON, J.

WILLIAMS, G. M., *see* GIBBONS, M. J.

WILLIAMS, J. O., *see* BARNICOAT, A. C.

WILLIAMS, P. J., the genesis and metamorphism of the Arinteiro–Bama Cu deposits, NW Spain [*abs*], 980

——, the geochemistry of ophiolitic mafic rocks from the polymetamorphic Ordenes Complex, Spain, 877–82

WILLIAMS, R. A., discussion [SIBSON], 766–7

WILSON, L., *see* BRAZIER, S.

WINCHESTER, J. A. & FLOYD, P. A., the geochemistry of the Ben Hope Sill suite, Sutherland, Scotland [*abs*], 959

WINCHESTER, J. A., *see also* LAMBERT, R. ST J.

WINDLEY, B. F., metamorphism and tectonics of the Himalaya, 849–65 figs

——, ACKERMAND, D. & HERD, R. K., petrology and chemographic relations in sapphirine/kornerupine-bearing rocks from the Limpopo Belt, Southern Africa [*abs*], 958–9

WOLFF, J. A., heterogeneity of phonolitic pumice deposits from Tenerife, Canary Islands [*abs*], 325

WOLLASTON MEDAL presented to P. J. WYLLIE, 328–9; W. FUND presented to H. C. JENKYNS, 331

WOODHEAD, D., small-scale experiments on bioturbation of marine sediments [*abs*], 328

WORSLEY, P., palaeolake Donjek: an investigation of a Yukon flood problem [*abs*], 970

R. H. WORTH PRIZE presented to A. E. MOURANT, 333

WORTHINGTON, P. F., *see* SIMPSON, R. W.

WRAITH, D. & HALE, M., pathfinder geochemistry as an aid to prospecting for porphyry copper style deposits [*abs*], 979

WRIGHT, E. P., the hydrogeological context [*abs*], 324

YARDLEY, B., the origin of Al_2SiO_5 pegmatites [*abs*], 960

YARDLEY, B. W., heat of reaction—the key to metamorphic kinetics [*abs*], 162
YARDLEY, B. W. D., quartz veins and devolatilization during metamorphism, 657–63 figs
yield and fracture surfaces, under multi-axial loading, 840
Yorkshire, Dales, cave development and valley excavation, 322
——, NW, karst water temperature–altitude gradient, 322

Zabargad Formation, 684–6
Zabargad (St John's) Island, fragment of sub-Red Sea lithosphere, 677, map 678, 679 *et sqq*
ZEESE, R., relief development in mountain areas of NE Nigeria and NW Tanzania [*abs*], 970